

REMARKS

This amendment cancels claim 3 without prejudice or disclaimer, since the retained claims, which are Nos. 1, 5-10, 12 and 14, adequately cover the invention. Claims 9, 10 and 12 are withdrawn from consideration. Of the claims considered on the merits, 1 and 14 are independent, and the rest are dependent.

Claims 1, 3, 5 and 6 (now 1, 5 and 6) are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuka '329, '870, '192 or '609 in view of Taylor (section 3 of the Office action), Benzinger (section 4 of the Office action), or Casadevall (section 5 of the Office action). Claims 6-8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Franz (section 6 of the Office action) or Burke (section 7 of the Office action) in view of Yuka '329, '870, '192 or '609.

The rejections are respectfully traversed. The claims considered on the merits have all been amended to avoid the rejections. Claim 1 and the claims dependent thereon are directed to a material to be molded comprising a porous material in which a phenolic resin is impregnated. The resin is produced by condensation of a phenolic compound and an aldehyde and/or aldehyde donor by using ammonia and/or amine as a catalyst. In addition, the phenolic resin is at least partially sulfomethylated and/or sulfimethylated at a time when said phenolic resin is at B-stage to enhance moldability, storage life, and heat resistance.

Independent claim 14 has been similarly amended and in particular states that the phenolic resin comprises a condensating polymer of a phenolic compound and an

aldehyde and/or aldehyde donor produced using ammonia and/or amine as a catalyst.

The use of ammonia and/or amine as a catalyst enables control of the temperature to start curing of the precondensation of the thermosetting resin. Sulfi- or sulfomethylated phenolic resin has unexpected stability when the phenolic resin is at the B-stage. However, in the case where the phenolic resin is produced by using ammonia and/or amine as catalyst, it is both stable below a prescribed temperature and quickly cured above this temperature. And so the curing temperature can be controlled by controlling the addition of ammonia and/or amine.

We refer to the original English specification at 12:11-17, 20:2-15 and page 36 following the table.

The first of these passages discloses that a percentage by weight of ammonia and/or amine that lies within a specified range is added to the phenolic compound. By the addition of ammonia and/or amine within this range, "...the temperature to start curing of the resulting precondensation polymer of said thermosetting resin...can be controlled." The same passage explains that at the start temperature the curing rate suddenly becomes large.

The second passage confirms that below the start temperature the precondensation polymer at B-stage has good stability and that above the start temperature it has a high curing speed.

The third passage further explains that the curing temperature can be controlled by the amount of amine added.

The three passages together make it clear that the invention confers an unusual degree of control, since adjusting the addition of ammonia and/or amine as a catalyst enables adjustment of the start temperature. Thus if it is known that the temperature of the condensation polymer during storage will be high, as in a warehouse that is not air-conditioned during the summer, the amount of catalyst can be adjusted to ensure that the start temperature is set at a high level to prevent premature curing. Long storage times are possible in accordance with the invention, as indicated, for example, in table 2 on page 38, which compares compound E made in accordance with the invention with comparison compound F.

On the other hand, if it is known that the temperature of the condensation polymer during storage will be low, as in an unheated or moderately heated warehouse during the winter, the amount of catalyst can be adjusted to ensure that the start temperature is set at a lower level. This facilitates the ease and rapidity of final curing when the time comes for that.

In both cases (high or low storage temperature), excellent long-term storage at B-stage can be achieved in combination with ease of final curing.

The prior art relied upon to support the rejections fails to disclose or suggest this concept.

Yuka '329 is cited for a disclosure of a fibrous material impregnated with a sulfomethylated compound of a condensation polymer wherein the condensation polymer comprises a phenol and aldehyde and/or aldehyde donor, the phenol aldehyde resin being cured with an amine compound.

Yuka '870, '192 and '609 are cumulatively cited for a disclosure of a sulfomethylated condensation polymer comprising a phenol and aldehyde and/or aldehyde donor wherein the phenol aldehyde resin is cured with an amine compound.

Taylor is cited for a disclosure of advancing a polymerization to the B-stage.

Benzinger is cited for a disclosure of a glass fiber sheet impregnated with a thermosetting resin wherein the flow rate of a thermosetting resin can be controlled by polymerizing the polymer to the B-stage.

Casadevall is cited for a disclosure of improving the ease of handling fiber impregnated with a phenolic resin by curing to the B-stage.

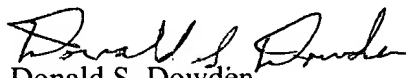
Franz is cited for a disclosure of fibers impregnated with a phenol formaldehyde resin wherein a metal foil is glued to one or both sides of the impregnated fibers.

Burke is cited for a disclosure of a corrugated fiberboard that resists deterioration in strength when in the presence of water.

Thus, the references that the Office action relies upon fail to disclose or suggest the invention as defined by the amended claims. The Yuka documents, relied upon to show curing with an amine compound, disclose proceeding directly to final curing. As the Office action recognizes, there is no suggestion in those documents that the resin should be advanced to the B-stage of curing. There is thus no hint of using ammonia or an amine compound to achieve the control made possible by the present invention. A disclosure of such use of ammonia or an amine compound is also missing from the other documents relied upon.

We respectfully submit, therefore, that the documents relied upon do not support a rejection of the claims as amended. Favorable reconsideration of the application is respectfully requested.

Respectfully submitted,
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